

Postgraduate Certificate

Design for Additive Manufacturing





Postgraduate Certificate Design for Additive Manufacturing

- » Modality: Online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/engineering/postgraduate-certificate/design-additive-manufacturing

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01

Introduction to the Program

Design for Additive Manufacturing is a convergence of engineering, computer science, and materials science, facilitating the creation of complex and functional parts through digital processes. In this sense, the application of 3D simulation and modeling tools serves to optimize product design, reducing the time and costs associated with traditional manufacturing. As a result, engineering professionals need to incorporate the most advanced techniques into their practice to minimize assemblies and maximize the structural integrity of parts. With this in mind, TECH has developed an innovative university program focused on Design for Additive Manufacturing. In addition, the program is offered in a convenient online format that allows students to set their own schedules.



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Thanks to this 100% online Postgraduate Certificate, you will master the use of digital modeling tools to create optimal designs for additive processes”

In the context of Industry 4.0, Design for Additive Manufacturing has positioned itself as a key discipline for transforming production processes. Among the main reasons for this is its ability to integrate advanced digital modeling and simulation techniques, enabling the design of optimized and customized parts with less need for assembly. In addition, this discipline facilitates the selection of suitable materials and the adaptation of designs to additive processes, improving production efficiency and reducing costs.

In this scenario, TECH presents a cutting-edge Postgraduate Certificate in Design for Additive Manufacturing. Designed by renowned experts in this field, the academic program will delve into the use of state-of-the-art software to carry out simulations of aspects such as resistance. Along the same lines, the syllabus will provide students with various techniques to minimize assembly and optimize component integration, ensuring the manufacture of robust parts. Graduates will thus gain advanced skills to design innovative solutions, evaluate the technical and economic feasibility of additive manufacturing projects, and lead digital transformation initiatives in industrial environments.

In terms of methodology, TECH uses its ground-breaking Relearning system, based on the repetition of key concepts to reinforce knowledge and facilitate learning. In this way, the combination of flexibility and a strong teaching approach makes it highly accessible. In addition, engineers will have access to an educational library with a variety of multimedia resources in different formats, such as interactive summaries, explanatory videos, and infographics. Specialists will also learn in simulated learning environments to extract valuable lessons to apply in their work practice.

This **Postgraduate Certificate in Design for Additive Manufacturing** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ The development of case studies presented by experts in Design for Additive Manufacturing
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ Its special emphasis on innovative methodologies in engineering practice
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



You will promote innovation in the design of complex and customized parts, adapted to the demands of digital production"

“

You will propose creative solutions in Additive Manufacturing that respond to specific production needs”

The teaching staff includes professionals from the field of Design for Additive Manufacturing, who bring their work experience to this program, as well as renowned specialists from leading companies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide an immersive learning experience designed to prepare for real-life situations.

This program is designed around Problem-Based Learning, whereby the student must try to solve the different professional practice situations that arise throughout the program. For this purpose, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts.

You will use specialized simulation software to develop accurate and functional models.

With the Relearning system used by TECH, you won't have to spend long hours studying and will enjoy a natural learning experience.



02

Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it relies on an enormous faculty of more than 6,000 professors of the highest international renown.



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*Study at the world's largest online university
and guarantee your professional success.
The future starts at TECH”*

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

Forbes

The best online university in the world

The most complete
syllabus

The most complete syllabuses on the university scene

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

TOP
international faculty



The most effective methodology

A unique learning method

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.

World's No.1

The World's largest online university

The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.



Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.



The top-rated university by its students

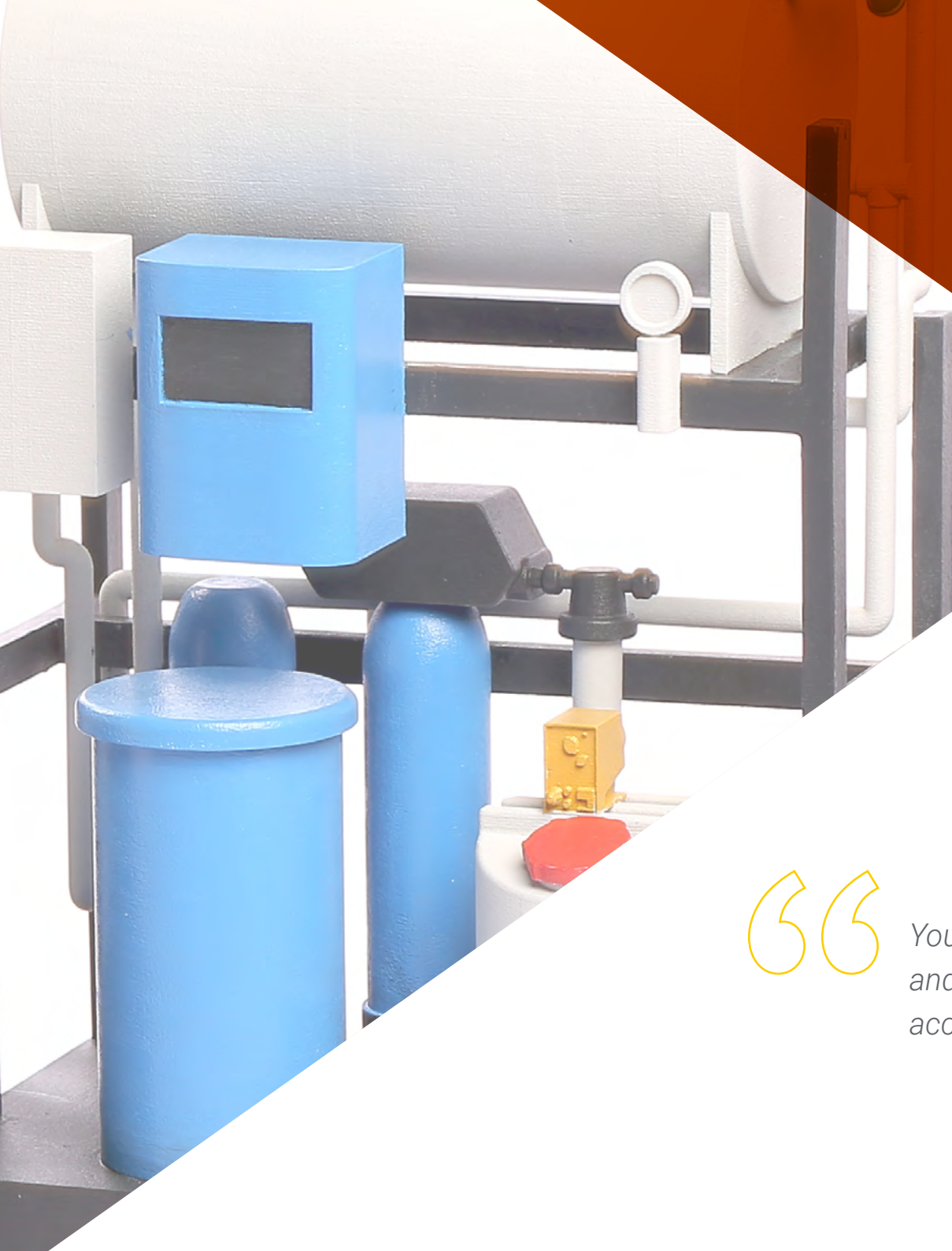
Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.



03 Syllabus

The teaching materials for this Postgraduate Certificate have been developed by renowned experts in Design for Additive Manufacturing. The academic program will delve into subjects ranging from the application of resistance simulations or sophisticated techniques to minimize assemblies to the use of software to generate optimized parts. As a result, students will develop advanced skills to optimize designs and evaluate the feasibility of Additive Manufacturing projects. This will enable them to lead innovative projects, improve production efficiency, and position themselves as key players in the digital transformation and sustainability of the manufacturing industry.



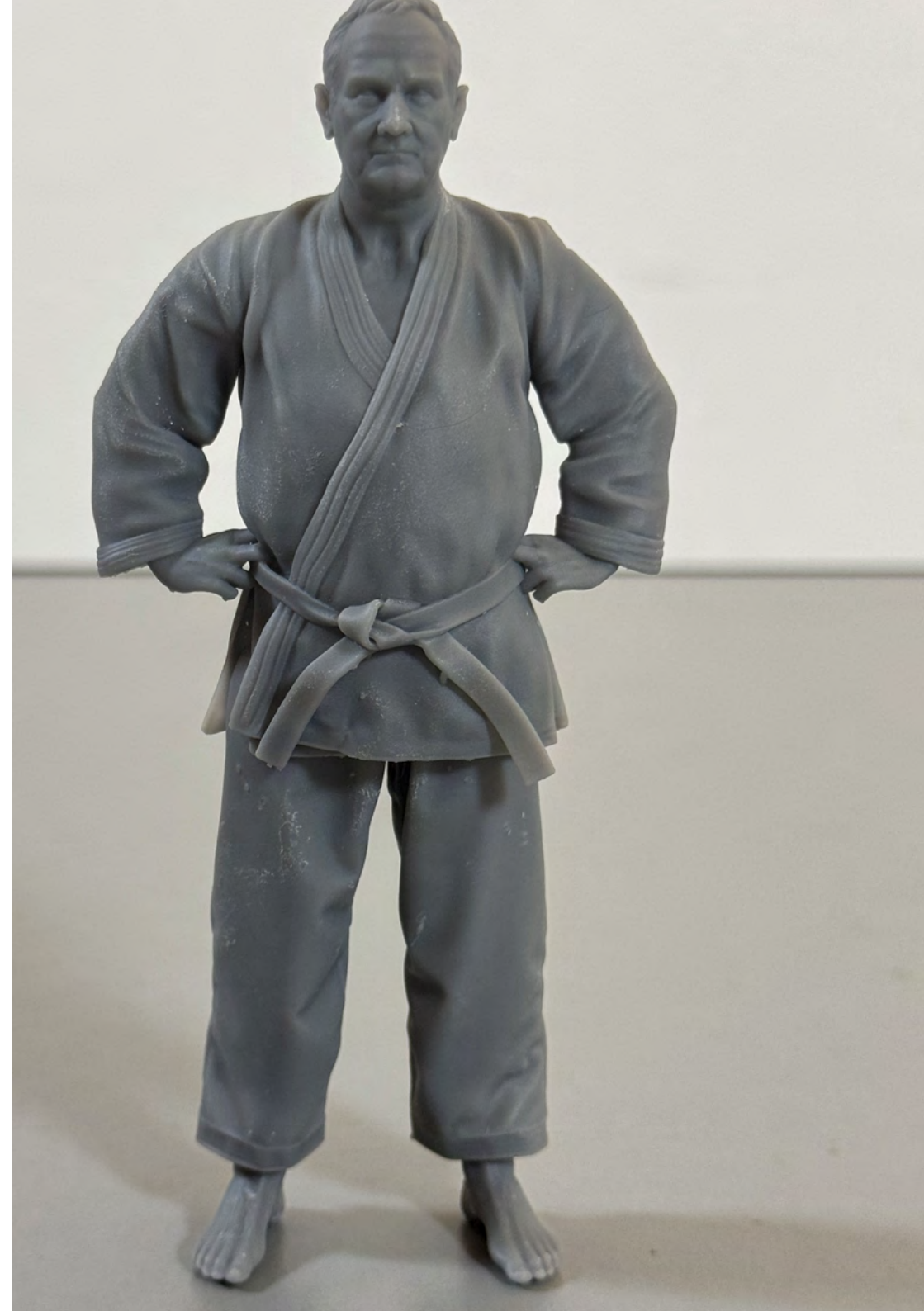


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You will develop skills to evaluate the technical and economic feasibility of Designs, taking into account specific parameters”

Module 1. Design for Additive Manufacturing

- 1.1. Design Focused on Optimizing Weight and Strength
 - 1.1.1. Use of Lattice Structures to Reduce Weight
 - 1.1.2. Topological Optimization to Improve Strength
 - 1.1.3. Application of Simulations in Design
- 1.2. Geometric Considerations in 3D Printing
 - 1.2.1. Complex Geometries Feasible in 3D Printing
 - 1.2.2. Orientation and Support Considerations
 - 1.2.3. Avoiding Sharp Angles in Overhangs
- 1.3. Designing Functional Parts vs. Aesthetic Parts
 - 1.3.1. Differences Between Functional and Decorative Design
 - 1.3.2. Materials and Finishes for Functional Parts
 - 1.3.3. Priorities in Geometry Selection
- 1.4. Reduction of Part and Assembly Count through Additive Manufacturing
 - 1.4.1. Consolidation of Complex Assemblies into a Single Part
 - 1.4.2. Advantages of Reducing Components for Production
 - 1.4.3. Design Considerations for Minimizing Assembly
- 1.5. Generation of Internal Structures and Lattice/Infill
 - 1.5.1. Design of Internal Lattice Structures
 - 1.5.2. Optimization to Reduce Material and Weight
 - 1.5.3. Applications in Lightweight and Strong Parts
- 1.6. Application of Generative Design in Complex Projects
 - 1.6.1. Use of Software to Generate Optimized Designs
 - 1.6.2. Considerations in Parameter Selection
 - 1.6.3. Success Stories in Applied Generative Design
- 1.7. Considerations for Cantilevered Parts and Supports
 - 1.7.1. Design Strategies to Avoid Cantilevers
 - 1.7.2. Efficient Use of Supports to Reduce Post-Processing
 - 1.7.3. Technologies That minimize the Need for Supports





- 1.8. Rapid Prototyping and Proof of Concept
 - 1.8.1. Advantages of Rapid Prototyping in Product Development
 - 1.8.2. Iteration Process in Proof of Concept
 - 1.8.3. Time Optimization in Functional Prototyping
- 1.9. Limitations in Design for Additive Manufacturing
 - 1.9.1. Restrictions due to Part Size and Resolution
 - 1.9.2. Material and Precision Limitations
 - 1.9.3. Impact of Printing Speed on Design
- 1.10. Design Optimization in 3D Printing
 - 1.10.1. Design Strategies to Improve Manufacturing Efficiency
 - 1.10.2. Reducing Printing Times through Design Adjustments
 - 1.10.3. Advanced Optimization Techniques for Cost Reduction

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You will incorporate energy efficiency and sustainability strategies into the Design, ensuring environmentally friendly additive manufacturing”

04

Teaching Objectives

Through this Postgraduate Certificate, engineers will acquire fundamental skills in Design for Additive Manufacturing. Students will gain advanced skills in digital modeling, simulation, and design optimization, assessing technical and economic feasibility, and selecting appropriate materials. In addition, they will be able to adapt designs to the limitations of additive processes and drive innovative solutions. They will therefore be qualified to lead digital transformation projects, improve production efficiency, and promote sustainability, positioning themselves as key players in industrial evolution.



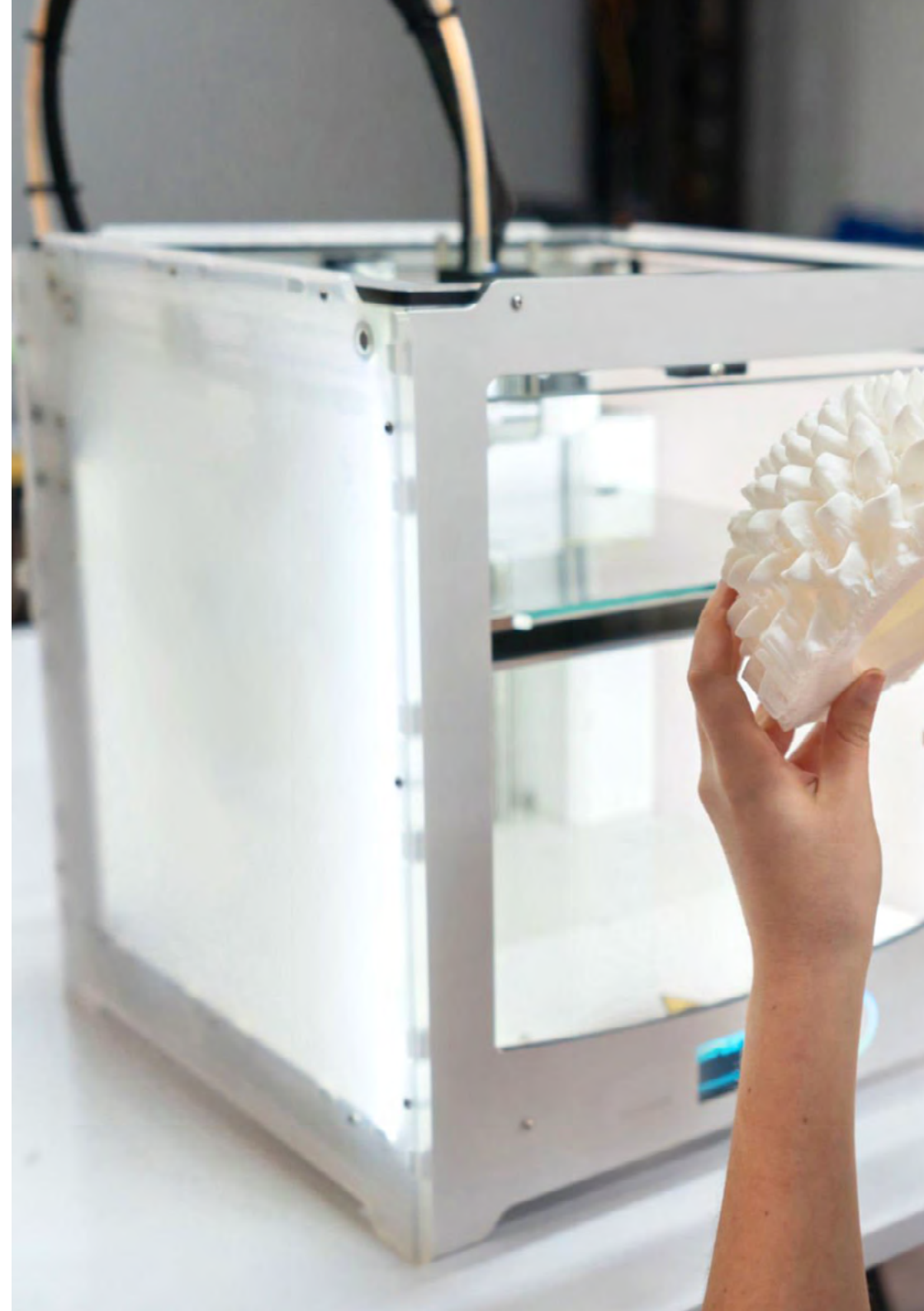
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You will be able to analyze the technical and economic feasibility of Designs, selecting the most suitable materials”



General Objectives

- ♦ Understand the concepts of how Additive Manufacturing works
- ♦ Delve into the technologies specifically for the materials used
- ♦ Understand how each technology works and its application, whether by the function of the part or object or by its performance
- ♦ Use 3D surface modeling software
- ♦ Delve into the different types of 3D printers, understanding their operating principles
- ♦ Learn about topological design and optimization of parts for 3D printing
- ♦ Use the most advanced post-processing techniques to optimize 3D printing
- ♦ Visualize products for specific sectors such as automotive, aerospace, and architecture
- ♦ Encourage the identification of business opportunities in the field of Additive Manufacturing
- ♦ Develop project management skills, from conceptualization and design to manufacturing and post-processing of parts





Specific Objectives

- ♦ Learn how to use CAD and simulation software, applying design methodologies that allow you to predict behavior during the printing process
- ♦ Identify and manage constraints such as overload angles, the need for supports, and the mechanical properties of materials

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You will increase your knowledge through real cases and resolution of complex situations in simulated learning environments”

05

Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.



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TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”

The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

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*At TECH you will NOT have live classes
(which you might not be able to attend)”*



The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

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TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want”

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.



A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule”

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.



As such, the best educational materials, thoroughly prepared, will be available in this program:



Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



Interactive Summaries

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

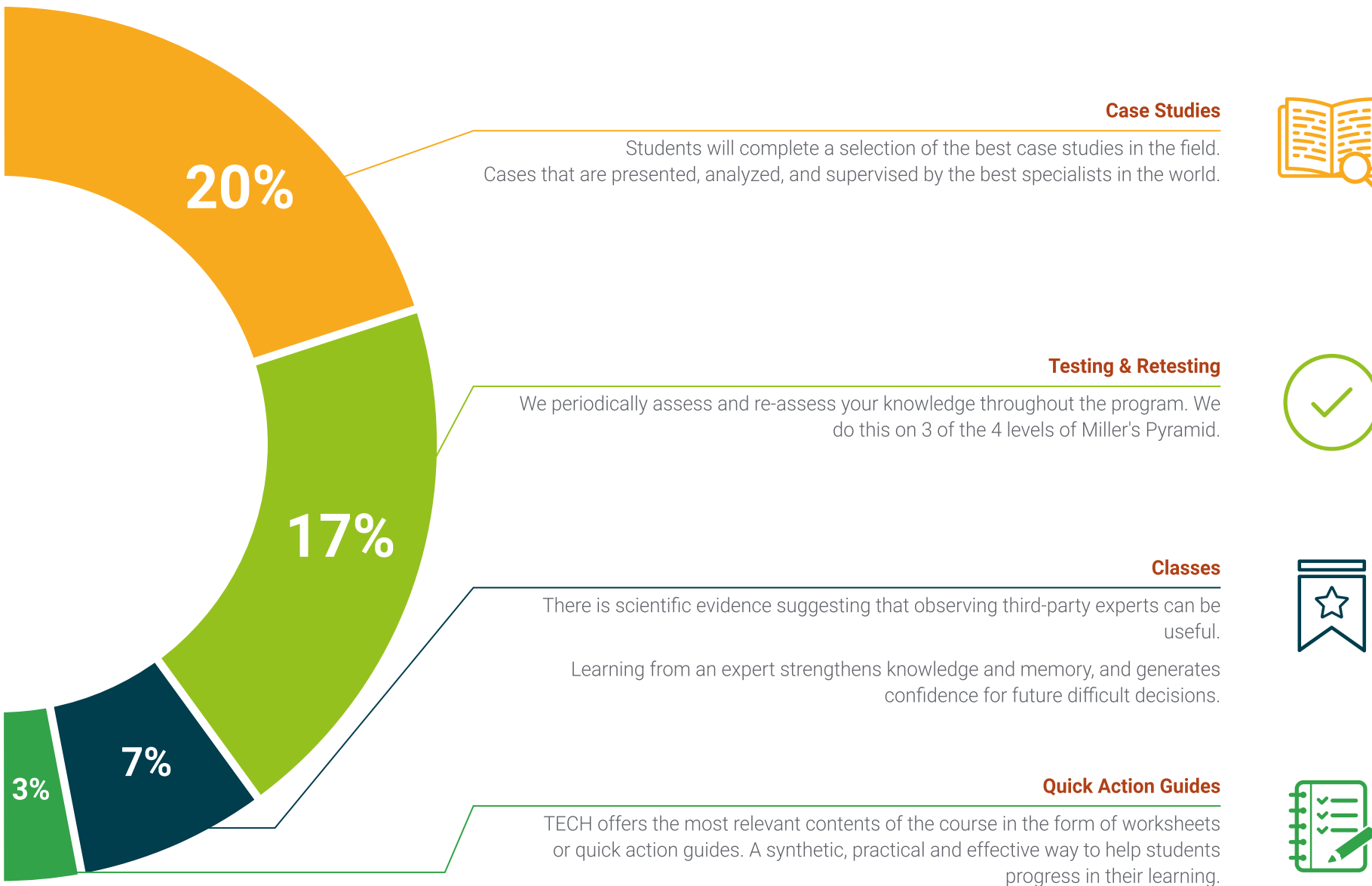
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





06

Teaching Staff

TECH's main objective is to offer the most practical, up-to-date, and comprehensive university programs available on the educational market. To achieve this, it carries out an exhaustive process to select its teaching staff. As a result, this Postgraduate Certificate has been designed by leading experts in Design for Additive Manufacturing. They have created numerous teaching materials that stand out for their high quality and for taking into account the requirements of the job market. Without a doubt, this is an immersive experience that will help engineers broaden their career prospects.



“

Leading specialists in Design for Additive Manufacturing have come together in this university program to show you the latest advances in this field”

Management



Mr. Parera Buxeres, Antoni

- ♦ CEO and Creative Director at Innou
- ♦ Project Manager and Industrial Designer at Play
- ♦ Master's Degree in Project Management and Efficient Project Management from the Polytechnic University of Catalonia
- ♦ Bachelor of Arts with a specialization in Design from the University of Southampton

Professors

Mr. Alonso Almirall, Óscar

- ♦ Head of Additive Manufacturing and 3D Printing at Industria Digital
- ♦ Mechanical Engineer at Leitat Technology Center
- ♦ Product Development Engineer at Mazel Ingenieros
- ♦ Bachelor's Degree in Industrial Engineering with a specialization in Mechanics from the Polytechnic University of Catalonia



07

Certificate

This Postgraduate Certificate in Design for Additive Manufacturing guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the Postgraduate Certificate issued by TECH Global University.



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Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”

This private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in Design for Additive Manufacturing** endorsed by TECH Global University, the world's largest online university.

TECH Global University, is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Design for Additive Manufacturing**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate Design for Additive Manufacturing

- » Modality: Online
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Postgraduate Certificate

Design for Additive Manufacturing